Remarks

The Office Action mailed April 21, 2005 has been carefully reviewed and the following remarks have been made in consequence thereof.

Claims 1, 2, 4-11, 31-44, 46-48, 54-60, and 62-66 are now pending in this application. Claims 1, 2, 4-11, 31-35, 40-44, 46-48, 54-65 are rejected. Claims 3, 12-30, 45, 49-53, and 61 have been canceled without prejudice, waiver, or disclaimer.

In accordance with 37 C.F.R. 1.136(a), a two month extension of time is submitted herewith to extend the due date of the response to the Office Action dated April 21, 2005, for the above-identified patent application from July 21, 2005, through and including September 21, 2005. In accordance with 37 C.F.R. 1.17(a)(2), authorization to charge a deposit account in the amount of $450.00 to cover this extension of time request also is submitted herewith.

The rejection of Claims 1, 2, 4-11, 31-35, 40-44, 46-48, 54-60, and 62-65 under 35 U.S.C. § 103(a) as being unpatentable over Bessler et al. (U.S. Patent No. 5,410,230), in view of Alford (U.S. Patent No. 5,220,255) and Kliman et al. (U.S. Patent No. 6,262,550) is respectfully traversed.

Bessler et al. describe a microprocessor (302) that provides a speed or torque control signal via a line (308) to an electronically commutated motor (310) to control a speed or torque of the motor (column 5, lines 45-48). The motor may include means for sensing a position of its rotatable assembly such as a circuit (314) for back electromotive force (BEMF) sensing which provides a speed signal to which the microprocessor is responsive (column 5, lines 55-60).

Alford describes an interface (10) incorporated into an air processing apparatus (12) (column 2, lines 42-44). The apparatus heats, cools, dehumidifies and circulates air in an enclosure or home (14) by means of a heat pump/air conditioner (16), supplemental electric resistance heater (18), air moving system (20), and thermostat (22) (column 2, lines 44-48). The heat pump, electric heater and air moving system cooperatively define a heating/ventilating/cooling or HVAC system (24) of the air processing apparatus (column 2, lines 48-51). The air moving system includes an electronically commutated motor or ECM

(26) which communicates with the enclosure via conventional return and supply air ducts (28, 30) respectively (column 2, lines 52-55).

Kliman et al. describe a motor monitoring system (10) composed of two similar motor units (12, 14) (column 3, lines 65-66). The motor unit (12) is located at a site of a motor (16) (column 3, lines 66-67). The motor unit (12) and the unit (14), each include conventional computer hardware (15), such as a central processor unit, a memory, such as random-access memory (RAM) and read-only memory (ROM), a mass storage device such as a hard-drive disk and CDROM, a communication module, such as a modem or network card, a keyboard, display monitor, and input and output connections over, for example, a data bus (column 5, lines 45-52).

Applicants respectfully traverse the statement on page 2 of the Office Action. The statement provides, "As recited in claims 1 and 31, Bessler et al. disclose a method for interfacing an electric motor to a controller using an electrical interface circuit (308, inherent, wherein connection is provided), including a controller circuit (302) and a motor control circuit (310)". Applicants respectfully submit that the line 308 does not include the microprocessor 302 and the electronically commutated motor 310. Rather, the microprocessor 302 provides a speed or torque control signal via line 308 to the electronically commutated motor 310 to control the speed or torque of the motor (column 5, lines 45-48, FIG. 3). Accordingly, the microprocessor 302 and the electronically commutated motor 310 are not included within the line 308.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. No combination of Bessler et al., Alford and Kliman et al. describes or suggests the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Bessler et al. with Alford and Kliman et al. because there is no motivation to combine the references suggested in the art. Additionally, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Rather, only the conclusory statement that "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to

utilize the teachings of Alford and Kliman et al. with the apparatus and method of Bessler et al. because Alford discloses the teachings of adjusting the received signal and Kliman et al. provide the use of RF signals..." suggests combining the disclosures. See the April 21, 2005 Office Action at page 5.

As is well established, the mere fact that the prior art structure could be modified does not make such a modification obvious unless the prior art suggests the desirability of doing so. *See* In re Gordon, 221 U.S.P.Q.2d 1125 (Fed. Cir. 1984). Furthermore, the Federal Circuit has determined that:

> [i]t is impermissible to use the claimed invention as an instruction manual or " template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."
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> In re Fitch, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992).

Moreover, as the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Further, under Section 103, "it is impermissible...to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." In re Wesslau, 147 USPQ 391, 393 (CCPA 1965). Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the cited art, nor any reasonable expectation of success has been shown. Accordingly, since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears

to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejection of Claims 1, 2, 4-11, 31-44, 46-48, 54-60, and 62-66 be withdrawn.

Moreover, if art "teaches away" from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. Specifically, Applicants respectfully submit that Alford and Kliman et al. and Bessler et al. teach away from the present invention, and as such, there is no suggestion or motivation to combine Bessler et al. with either Alford and Kliman et al. Specifically, in contrast to the present invention, Bessler et al. describe a microprocessor that provides a speed or torque control signal via a line to an electronically commutated motor to control a speed or torque of the motor. The motor may include means for sensing a position of its rotatable assembly such as a circuit for back electromotive force sensing which provides a speed signal to which the microprocessor is responsive. In contrast to Bessler et al. and the present invention, Alford describes an interface incorporated into an air processing apparatus and coupled to an electronically commutated motor, and Kliman et al. describe a motor unit located at a site of a motor and including conventional computer hardware, a memory, and a communication module. Accordingly, Bessler et al., Alford, and Kliman et al. teach away from the present invention, and from each other, and as such, any combination of the cited art appears to support the nonobviousness of the present invention. Therefore Applicants respectfully submit that all of the presently pending claims are patentable over the cited art.

In addition, and to the extent understood, no combination of Bessler et al., Alford, and Kliman et al. describes or suggests the claimed invention. Specifically, Claim 1 recites a method for interfacing an electric motor to a controller using an electrical interface circuit, the interface circuit including a controller circuit and a motor control circuit, the controller circuit including a transmitter circuit and a receiver circuit, the motor control circuit including a transmitter circuit and a receiver circuit, and the interface circuit electrically coupled to the controller and the electric motor, the method comprising the steps of "coupling the motor control circuit directly to the electric motor, wherein the motor control circuit is separate from the controller; adjusting a level of a first signal received from the controller that is

separate from a thermostat configured to communicate a temperature to the controller; converting, by the interface circuit, the first signal received from the controller to generate a second signal including at least one of an infrared signal and a radio frequency (RF) signal, wherein the controller is coupled via the interface circuit to a microcontroller located within the electric motor; outputting the second signal to control the electric motor; receiving, by the motor control circuit, a third signal from the electric motor; and transmitting the third signal from the electric motor to the controller."

No combination of Bessler et al. and Alford and Kliman et al. describes or suggests a method for interfacing a motor and a controller as described in Claim 1. Rather, in contrast to the present invention, Bessler et al. describe a microprocessor that provides a speed or torque control signal via a line to an electronically commutated motor to control a speed or torque of the motor. The motor may include means for sensing a position of its rotatable assembly such as a circuit for back electromotive force sensing which provides a speed signal to which the microprocessor is responsive. Alford describes an interface incorporated into an air processing apparatus and coupled to an electronically commutated motor, and Kliman et al. describe a motor unit located at a site of a motor and including conventional computer hardware, a memory, and a communication module.

Further, none of Bessler et al., Alford, or Kliman et al., considered alone or in combination, describe or suggest a method for interfacing an electric motor to a controller as recited in Claim 1. Specifically, none of Bessler et al., Alford, or Kliman et al., considered alone or in combination, describe or suggest converting, by the interface circuit, the first signal received from the controller to generate a second signal including at least one of an infrared signal and a radio frequency (RF) signal, where the controller is coupled via the interface circuit to a microcontroller located within the electric motor. Rather, Bessler et al. describe a microprocessor that provides a speed or torque control signal via a line to an electronically commutated motor to control a speed or torque of the motor. The motor may include means for sensing a position of its rotatable assembly such as a circuit for back electromotive force sensing which provides a speed signal to which the microprocessor is responsive. Accordingly, Bessler does not describe or suggest the controller coupled via the interface circuit to a microcontroller located within the electric motor. Alford describes an interface incorporated into an air processing apparatus and coupled to an electronically commutated motor. Accordingly, Alford does not describe or suggest the controller coupled

via the interface circuit to a microcontroller located within the electric motor. Kliman et al. describe a motor unit located at a site of a motor and including conventional computer hardware, a memory, and a communication module.

Applicants respectfully traverse the statement on page 5 of the Office Action that Kliman et al. disclose the interface, where the controller is coupled via the interface circuit to a microcontroller 15 located within the electric motor unit 12. Applicants respectfully submit that the electric motor unit 12 as described in Kliman et al. does not describe or suggest an electric motor as recited in Claim 1. Rather, the electric motor unit 12 in Kliman et al. includes conventional computer hardware, a memory, a mass storage device, a communication module, a keyboard, a display monitor, and input and output connections over a data bus. Accordingly, Kliman et al. does not describe or suggest the controller coupled via the interface circuit to a microcontroller located within the electric motor.

Accordingly, no combination of Bessler et al., Alford, and/or Kliman et al. describes or suggests the controller coupled via the interface circuit to a microcontroller located within the electric motor as recited in Claim 1. For all of the reasons set forth above, Claim 1 is submitted to be patentable over Bessler et al. in view of Alford and Kliman et al.

Claims 2, 4-11, and 66 depend, directly or indirectly, from independent Claim 1. When the recitations of Claims 2, 4-11, and 66 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2, 4-11, and 66 likewise are patentable over Bessler et al. in view of Alford and Kliman et al.

Claim 31 recites an electrical interface circuit comprising "a controller interface circuit configured to communicate signals with a controller, said controller interface circuit including a first transmitter circuit and a first receiver circuit, said electrical interface circuit further configured to convert a voltage signal to at least one of an infrared signal and an RF signal, said controller coupled via said electrical interface circuit to a microcontroller located within an electric motor; and a motor control interface circuit directly coupled to said electric motor and coupled to said controller interface circuit, said motor control interface circuit comprising a second transmitter circuit and a second receiver circuit, is separate from said controller, and configured to receive signals generated by said electric motor."

None of Bessler et al., Alford, or Kliman et al., considered alone or in combination, describe or suggest an electrical interface circuit as recited in Claim 31. Specifically, none of Bessler et al., Alford, or Kliman et al., considered alone or in combination, describe or suggest an electrical interface circuit configured to convert a voltage signal to at least one of an infrared signal and an RF signal, the controller coupled via the electrical interface circuit to a microcontroller located within an electric motor. Rather, Bessler et al. describe a microprocessor that provides a speed or torque control signal via a line to an electronically commutated motor to control a speed or torque of the motor. The motor may include means for sensing a position of its rotatable assembly such as a circuit for back electromotive force sensing which provides a speed signal to which the microprocessor is responsive. Accordingly, Bessler does not describe or suggest the controller coupled via the electrical interface circuit to a microcontroller located within an electric motor. Alford describes an interface incorporated into an air processing apparatus and coupled to an electronically commutated motor. Accordingly, Alford does not describe or suggest the controller coupled via the electrical interface circuit to a microcontroller located within an electric motor. Kliman et al. describe a motor unit located at a site of a motor and including conventional computer hardware, a memory, and a communication module.

Applicants respectfully traverse the statement on page 5 of the Office Action that Kliman et al. disclose the interface, where the controller is coupled via the interface circuit to a microcontroller 15 located within the electric motor unit 12. Applicants respectfully submit that the electric motor unit 12 as described in Kliman et al. does not describe or suggest an electric motor as recited in Claim 31. Rather, the electric motor unit 12 in Kliman et al. includes conventional computer hardware, a memory, a mass storage device, a communication module, a keyboard, a display monitor, and input and output connections over a data bus. Accordingly, Kliman et al. does not describe or suggest the controller coupled via the electrical interface circuit to a microcontroller located within an electric motor.

Accordingly, no combination of Bessler et al., Alford, and/or Kliman et al. describes or suggests the controller coupled via the electrical interface circuit to a microcontroller located within an electric motor as recited in Claim 31. For the reasons set forth above, Claim 31 is submitted to be patentable over Bessler et al. in view of Alford and Kliman et al.

Claims 32-44 and 46-48 depend, directly or indirectly, from independent Claim 31. When the recitations of Claims 32-44 and 46-48 are considered in combination with the recitations of Claim 31, Applicants submit that dependent Claims 32-44 and 46-48 likewise are patentable over Bessler et al. in view of Alford and Kliman et al.

Claim 54 recites an electrical interface circuit for a HVAC system comprising an electronically commutated motor, the electrical interface comprising "a controller interface circuit configured to communicate signals with a controller, said controller interface circuit including a first transmitter circuit and a first receiver circuit, said electrical interface circuit configured to convert a voltage signal to at least one of an infrared signal and an RF signal, said controller coupled via said electrical interface circuit to a microcontroller located within an electronically commutated motor; and a motor control interface circuit directly coupled to said electronically commutated motor and coupled to said controller interface circuit, said motor control interface circuit coupled to said controller interface circuit by using a serial four-wire communications cable, said motor control interface circuit including a second transmitter circuit and a second receiver circuit, is separate from said controller, and configured to receive signals from said electronically commutated motor, said second transmitter circuit including a first optocoupler, and said second receiver circuit including a second optocoupler, said first and second optocouplers configured to isolate signals between said motor control interface circuit and said electronically commutated motor, and said electrical interface circuit configured to interrogate said electronically commutated motor to acquire status and diagnostic information."

None of Bessler et al., Alford, or Kliman et al., considered alone or in combination, describe or suggest an electrical interface circuit for a HVAC system as recited in Claim 54. Specifically, none of Bessler et al., Alford, or Kliman et al., considered alone or in combination, describe or suggest the electrical interface circuit configured to convert a voltage signal to at least one of an infrared signal and an RF signal, the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor. Rather, Bessler et al. describe a microprocessor that provides a speed or torque control signal via a line to an electronically commutated motor to control a speed or torque of the motor. The motor may include means for sensing a position of its rotatable assembly such as a circuit for back electromotive force sensing which provides a speed signal to which the microprocessor is responsive. Accordingly, Bessler does not describe or suggest

the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor. Alford describes an interface incorporated into an air processing apparatus and coupled to an electronically commutated motor. Accordingly, Alford does not describe or suggest the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor. Kliman et al. describe a motor unit located at a site of a motor and including conventional computer hardware, a memory, and a communication module.

Applicants respectfully traverse the statement on page 5 of the Office Action that Kliman et al. disclose the interface, where the controller is coupled via the interface circuit to a microcontroller 15 located within the electric motor unit 12. Applicants respectfully submit that the electric motor unit 12 as described in Kliman et al. does not describe or suggest an electric motor as recited in Claim 54. Rather, the electric motor unit 12 in Kliman et al. includes conventional computer hardware, a memory, a mass storage device, a communication module, a keyboard, a display monitor, and input and output connections over a data bus. Accordingly, Kliman et al. does not describe or suggest the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor.

Accordingly, no combination of Bessler et al., Alford, and/or Kliman et al. describes or suggests the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor as recited in Claim 54. For the reasons set forth above, Claim 54 is submitted to be patentable over Bessler et al. in view of Alford and Kliman et al.

Claims 55-57 depend from independent Claim 54. When the recitations of Claims 55-57 are considered in combination with the recitations of Claim 54, Applicants submit that dependent Claims 55-57 likewise are patentable over Bessler et al. in view of Alford and Kliman et al.

Claim 58 recites an electrical interface circuit for a HVAC system comprising an electronically commutated motor, the electrical interface comprising "a controller interface circuit configured to communicate signals with a controller, said controller interface circuit including a first transmitter circuit and a first receiver circuit, said electrical interface circuit configured to convert a voltage signal to at least one of an infrared signal and an RF signal,

said controller coupled via said electrical interface circuit to a microcontroller located within an electronically commutated motor; and a motor control interface circuit directly coupled to said electronically commutated motor and coupled to said controller interface circuit, said motor control interface circuit coupled to said controller interface circuit by using a digital wireless interface, said motor control interface circuit including a second transmitter circuit and a second receiver circuit, is separate from said controller, and configured to receive signals from said electronically commutated motor, said second transmitter circuit including a first optocoupler, said second receiver circuit including a second optocoupler, said first and second optocouplers configured to isolate signals between said motor control interface circuit and said electronically commutated motor, and said electrical interface circuit configured to interrogate said electronically commutated motor to acquire status and diagnostic information."

None of Bessler et al., Alford, or Kliman et al., considered alone or in combination, describe or suggest an electrical interface circuit for a HVAC system as recited in Claim 58. Specifically, none of Bessler et al., Alford, or Kliman et al., alone or in combination, describe or suggest the electrical interface circuit configured to convert a voltage signal to at least one of an infrared signal and an RF signal, the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor. Rather, Bessler et al. describe a microprocessor that provides a speed or torque control signal via a line to an electronically commutated motor to control a speed or torque of the motor. The motor may include means for sensing a position of its rotatable assembly such as a circuit for back electromotive force sensing which provides a speed signal to which the microprocessor is responsive. Accordingly, Bessler does not describe or suggest the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor. Alford describes an interface incorporated into an air processing apparatus and coupled to an electronically commutated motor. Accordingly, Alford does not describe or suggest the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor. Kliman et al. describe a motor unit located at a site of a motor and including conventional computer hardware, a memory, and a communication module.

Applicants respectfully traverse the statement on page 5 of the Office Action that Kliman et al. disclose the interface, where the controller is coupled via the interface circuit to

a microcontroller 15 located within the electric motor unit 12. Applicants respectfully submit that the electric motor unit 12 as described in Kliman et al. does not describe or suggest an electric motor as recited in Claim 58. Rather, the electric motor unit 12 in Kliman et al. includes conventional computer hardware, a memory, a mass storage device, a communication module, a keyboard, a display monitor, and input and output connections over a data bus. Accordingly, Kliman et al. does not describe or suggest the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor.

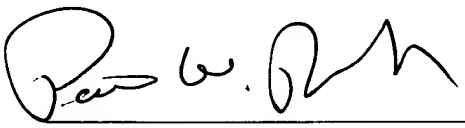
Accordingly, no combination of Bessler et al., Alford, and/or Kliman et al. describes or suggests the controller coupled via the electrical interface circuit to a microcontroller located within an electronically commutated motor as recited in Claim 58. For the reasons set forth above, Claim 58 is submitted to be patentable over Bessler et al. in view of Alford and Kliman et al.

Claims 59-60 and 62-65 depend from independent Claim 54. When the recitations of Claims 59-60 and 62-65 are considered in combination with the recitations of Claim 58, Applicants submit that dependent Claims 59-60 and 62-65 likewise are patentable over Bessler et al. in view of Alford and Kliman et al.

For the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1, 2, 4-11, 31-44, 46-48, 54-60, and 62-65 be withdrawn.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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